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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,730	10/25/2000	Oguz Tanrikulu	2376.2001-000	3000

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EXAMINER

HAROLD, JEFFEREY F

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 02/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/696,730

Applicant(s)

TANRIKULU ET AL.

Examiner

Jefferey F. Harold

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## DETAILED ACTION

### *Information Disclosure Statement*

1. The references listed in the Information Disclosure Statement submitted on May 24, 2001, have been considered by the examiner (see attached PTO-1449).

### *Claim Rejections - 35 USC § 102*

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims **1-2, 6-7, 11-15, 17-18, 32, 34-35, 37-39**, are rejected under 35 U.S.C. 102(b) as being anticipated by Cox et al. (United States Patent 5,353,346), hereinafter referenced as Cox.

Regarding **claim 1**, Cox discloses DTMF detection having sample rate decimation and adaptive tone detection. In addition Cox discloses a process for detecting in an electrical signal a presence of additive combinations a few constant-amplitude sinusoidal components, N-tones, used to encode dialed digits, the method comprising:

separating the input stream of data into parallel output streams (18), which reads on claimed "subbands", as disclosed at column 2, lines 43-50 and exhibited in figure 1;  
analyzing energies with in the output streams to derive data required for determining if the input has the requisite properties of an N-tone, as disclosed at column 3, lines 15-23 and exhibited in figures 2 and 3.

Regarding **claim 2**, Cox discloses everything claimed as applied above (see claim 1), in addition Cox discloses wherein the separating the electrical signal into the

subbands comprises extracting subbands of 0-1 kHz and 1-2 kHz, as disclosed at column 5, lines 35-49 and exhibited in figure 2.

Regarding **claim 6**, Cox discloses everything claimed as applied above (see claim 1), in addition Cox discloses filtering the subbands with notch filters (24) corresponding to the number of frequencies of the sinusoids within the respective subbands, as disclosed at column 3, line 15 through column 4, line 2 and exhibited in figures 1 and 2.

Regarding **claim 7**, Cox discloses everything claimed as applied above (see claim 6), in addition claim 7 is interpreted and thus rejected for reasons set forth above in claim 6.

Regarding **claim 11**, Cox discloses everything claimed as applied above (see claim 6), in addition, Cox discloses wherein the frequency estimators (22) identify the frequencies, which reads on claimed "preclassifying" of the dominant spectral tone so that the notch filter may be initialized, which reads on claimed "selecting filters" to filter out these tones, as disclosed at column 3, lines 15-62 and exhibited in figures 1 and 2.

Regarding **claim 12**, Cox discloses everything claimed as applied above (see claim 1), in addition, Cox discloses wherein the magnitude estimators (26 and 28), which reads on claimed "analyzing the energies" determines whether a summing of the energies in the subbands has the requisite properties of an N-tone, which reads on claimed "exceeds a minimum threshold level", as disclosed at column 3, lines 15-30 and exhibited in figures 1 and 2.

Regarding **claim 13**, Cox discloses everything claimed as applied above (see claim 1), in addition, Cox discloses wherein analyzing the energies comprises determining whether a difference between the energies in the subbands is below a twist-test threshold, as disclosed at column 7, lines 12-24 and column 9, lines 7-33 and exhibited in figure 2.

Regarding **claim 14**, Cox discloses everything claimed as applied above (see claim 1), in addition, Cox discloses comparing the energy levels of an output of a notch filter having a lowest output energy level from among at least two notch filters in a bank of filters to the energy of the input signal to the bank of filters, as disclosed column 4, line 47 through column 5, line 8 and column 7, lines 12-24 and exhibited in figures 1 and 2.

Regarding **claim 15**, Cox discloses everything claimed as applied above (see claim 1), in addition Cox discloses inherently reporting valid dialed digits as evidenced by the fact that one of ordinary skill in the art would have recognized that reporting a valid dialed digit would have been provided for the purpose of providing indication upon detection of a true signal.

Regarding **claims 17-18, 32, 34-35, 37-39**, they are interpreted and thus rejected for the reasons set forth above in the rejection of claims 1-2, 6-7, and 11-17.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. ***Claims 3-5 and 19-22, 27 and 36***, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of applicant's admitted prior art.

Regarding **claim 3**, Cox discloses everything claimed as applied above (see claim 1), however Cox fails to disclose filtering the electrical signal using a power symmetric infinite impulse response filter. However, the examiner maintains that it was well known in the art to provide filtering the electrical signal using a power symmetric infinite impulse response filter, as taught by applicant's admitted prior.

In addition, applicant's admitted prior art, "Design and Discrete Re-optimization of All-pass Based Power Symmetric IIR Filters" discloses highly selective low-pass power symmetric IIR filters which are well suited of sub-band decomposition in applications such as acoustic echo cancellation.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cox by specifically providing filtering the electrical signal using a power symmetric infinite impulse response filter, as taught by applicant's admitted prior art, for the purpose of reduced computational complexity.

Regarding **claim 4**, Cox and applicant's admitted prior art, the combination, disclose everything claimed as applied above (see claim 3), however the combination fails to disclose implementation in polyphase form. However, the examiner maintains that it was well known in the art to provide implementation in a polyphase form, as taught by applicant's admitted prior.

In addition, applicant's admitted prior art, "Adaptive Signal Processing Algorithms with Accelerated Convergence and Noise Immunity" discloses analysis and synthesis blocks of all-pass polyphase networks.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing implementation in polyphase form, as taught by applicant's admitted prior art, for the purpose of reduced computational complexity.

Regarding **claim 5**, Cox and applicant's admitted prior art, the combination, disclose everything claimed as applied above (see claim 3), however the combination fails to disclose all-pass sections implemented in compact realizations. However, the examiner maintains that it was well known in the art to all-pass sections implemented in compact realizations, as taught by applicant's admitted prior.

In addition, applicant's admitted prior art, "Digital All-Pass Networks" discloses all-pass section implemented in various realization.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing all-pass sections implemented in compact realizations, as taught by applicant's admitted prior art, for the purpose of reduced computational complexity.

Regarding **claims 19-22, 27 and 36**, they are interpreted and thus rejected for the reasons set forth above in the rejection of claims 1-14

4. **Claim 8, 16, 17, 23, 25-31, 33 and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of well know prior art (MPEP 2144.03).

Regarding **claim 8**, Cox disclose everything claimed, as applied above, (see claim 6), in addition Cox discloses DTMF detection by splitting the signal and extracting the subbands as disclosed above in claim 2, however, Cox fails to disclose filtering the subbands with four notch filters per bank of filters. However, the examiner takes official notice of the fact that it was well know in the art to provide filtering the subbands with four notch filters per bank of filters.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cox by specifically providing filtering the subbands with four notch filters per bank of filters, for the purpose of obtaining additional information about individual signal components.

Regarding **claim 16**, Cox discloses everything claimed as applied above (see claim 1), in addition Cox discloses splitting the signal and analyzing the electrical signal as executed by a digital processor, as disclosed at column 5, lines 22-64 and exhibited in figure 2, however, Cox fails to disclose an analog to digital converter. However, the examiner takes official notice of the fact that it was well know in the art to provide an analog to digital converter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cox by specifically providing an analog to digital converter, for the purpose of converting analog signals to a format to be analyzed by the detection circuitry.



Regarding **claim 24**, Cox discloses everything claimed as applied above (see claim 17), however, Cox fails to disclose a device supporting voice over IP. However, the examiner takes official notice of the fact that it was well known in the art to provide a device supporting voice over IP.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cox by specifically providing a device for supporting voice over IP, for the purpose of processing voice data over a data network using internet protocol.

Regarding **claims 23, 25-31, 33 and 40**, they are interpreted and thus rejected for the reasons set forth above in the rejection of claims 1-16 and 24.

5. **Claims 9-10** rejected under 35 U.S.C. 103(a) as being unpatentable over Cox in view of well known prior art (MPEP 2144.03), further in view of Stroobach (United States Patent 5,119,322).

Regarding **claim 9**, Cox discloses everything claimed, as applied above, (see claim 6), in addition Cox discloses splitting the signal and extracting the subbands as disclosed above in claim 2, further the use of four notch filter is disclosed in claim 8 above, however, Cox and well known prior art, the combination, fails to disclose MF-R1 detection. However, the examiner maintains that it was well known in the art to provide MF-R1, as taught by Stroobach.

In a similar field of endeavor Stroobach discloses a digital DTMF detector. In addition, Stroobach discloses wherein other types of tones (e.g., MF-R1 and MF-R2,

etc.) may be detected using the same principles of DTMF detection with suitable modifications being made to the threshold values.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing MF-R1 detection, as taught by Stroobach, for the purpose of detecting valid dialed signals.

Regarding **claim 10**, Cox disclose everything claimed, as applied above, (see claim 6), in addition Cox discloses splitting the signal and extracting the subbands as disclosed above in claim 2, further the use of four notch filter is disclosed in claim 8 above, however, Cox and well known prior art, the combination, fails to disclose MF-R2 detection. However, the examiner maintains that it was well known in the art to provide MF-R2, as taught by Stroobach.

In a similar field of endeavor Stroobach discloses a digital DTMF detector. In addition, Stroobach discloses wherein other types of tones (e.g., MF-R1 and MF-R2, etc.) may be detected using the same principles of DTMF detection with suitable modifications being made to the threshold values.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination by specifically providing MF-R2 detection, as taught by Stroobach, for the purpose of detecting valid dialed signals

### ***Double Patenting***

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

6. ***Claims 1-40*** are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1-4 and 10-11 of copending Application No. 09/812,057. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

### ***Citation of Pertinent Art***

7. Park et al. (United States Patent 5,392,348), DTMF detection having sample rate decimation and adaptive tone detection.

**Conclusion**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F. Harold whose telephone number is (703) 306-5836. The examiner can normally be reached on Monday-Friday 7:30am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



JFH  
February 5, 2003



FORESTER W. ISEN  
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